

# **Ansible**

Presented by Craig Maloney  
<http://decafbad.net>

# What we'll cover...

- Ansible Basics
- Some simple Ansible examples
- Ansible Galaxy (briefly)

# What we will conveniently ignore...

- More complex Ansible deployments
- Ansible Tower
- Ansible's services
  - Automation Jumpstart
  - Ansible Health Check



<https://flic.kr/p/eTsT>



Reminder: this is one way to do this

*Yes I know there are other tools out there;  
This is what worked for us.*

*Thank you!*

**Metaphors...**



<https://www.flickr.com/photos/mseckington/3445427966>









<https://flic.kr/p/9iQD1E>



I thought this was a playbook,  
but it smells like a recipe.



<https://flic.kr/p/gieWS>

**But really...**

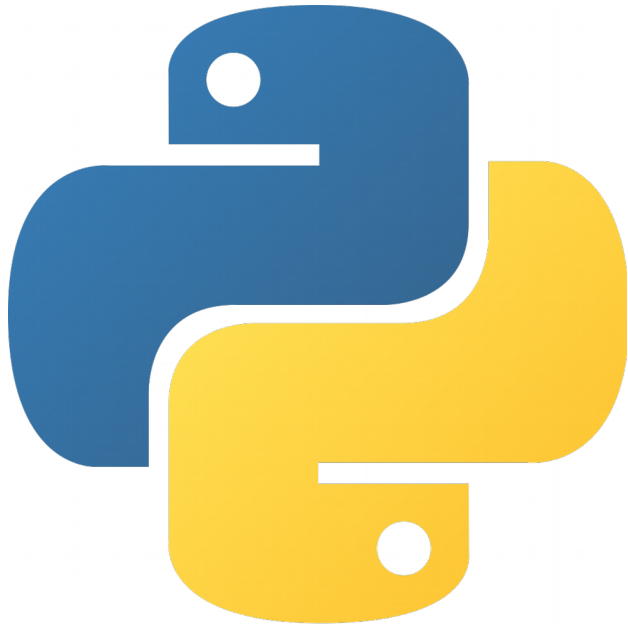




<https://flic.kr/p/7F6iyr>

**What is Ansible?**





=



ANSIBLE

YAML



# Why we used Ansible

- We were already a Python shop
- We didn't want to run “yet another service” on our systems
- We were comfortable with YAML
- SSH is installed on our target machines

# Why we used Ansible

- We were already a Python shop
- We didn't want to run “yet another service” on our systems
- We were comfortable with YAML
- SSH is installed on our target machines
- We were already using Fabric as a deployment tool and it drove me insane

***Our servers and applications...***



<https://flic.kr/p/os3JHY>



# Ansible Caveats

- Target machines must have Python installed
- Need “sshpass” installed on host machine if you’re using passwords
- If you’re having issues with SSH then Ansible will only compound those issues
- root-like things require root-like access (sudo, privileged accounts, etc.)

```
[defaults]
# Don't display cows if cowsay is installed
nocows=True

ask_pass=True
ask_sudo_pass=True

# Specify transport so that SSH KeyForwarding
works as expected
transport = ssh

[ssh_connection]
ssh_args = -o ForwardAgent=yes

scp_if_ssh = True
```

**Terminology...**

# **“Playbooks” and “Plays”**



**Think of Playbooks as  
“Makefiles”**

**Playbooks should  
leave the target system  
in a consistent state  
when finished**

*(Fancy people call that “idempotent”)*

In **computer science**, the term idempotent is used more comprehensively to describe an operation that will produce the same results if executed once or multiple times.<sup>[7]</sup> This may have a different meaning depending on the context in which it is applied. In the case of **methods** or **subroutine** calls with **side effects**, for instance, it means that the modified state remains the same after the first call. In **functional programming**, though, an idempotent function is one that has the property  $f(f(x)) = f(x)$  for any value  $x$ .<sup>[8]</sup>

This is a very useful property in many situations, as it means that an operation can be repeated or retried as often as necessary without causing unintended effects. With non-idempotent operations, the algorithm may have to keep track of whether the operation was already performed or not.

*(Thank you, Wikipedia)*



**A simple play...**

```
(ansible)craig@lister:~/projects/ansible_presentation/ansible$ ansible -i inventory/hosts production -m ping
-u pi -vvvv -k
No config file found; using defaults
SSH password:
Loaded callback minimal of type stdout, v2.0
<192.168.1.157> ESTABLISH SSH CONNECTION FOR USER: pi
<192.168.1.157> SSH: EXEC sshpass -d12 ssh -C -vvv -o ControlMaster=auto -o ControlPersist=60s -o User=pi -o
ConnectTimeout=10 -o ControlPath=/home/craig/.ansible/cp/ansible-ssh-%h-%p-%r 192.168.1.157 '/bin/sh -c
''''( umask 22 && mkdir -p "` echo $HOME/.ansible/tmp/ansible-tmp-1462650872.08-108657558511969 `" && echo
"` echo $HOME/.ansible/tmp/ansible-tmp-1462650872.08-108657558511969 `" )''''''
<192.168.1.157> PUT /tmp/tmpQ9iRLw TO /home/pi/.ansible/tmp/ansible-tmp-1462650872.08-108657558511969/ping
<192.168.1.157> SSH: EXEC sshpass -d12 sftp -b - -C -vvv -o ControlMaster=auto -o ControlPersist=60s -o
User=pi -o ConnectTimeout=10 -o ControlPath=/home/craig/.ansible/cp/ansible-ssh-%h-%p-%r '[192.168.1.157]'
<192.168.1.157> ESTABLISH SSH CONNECTION FOR USER: pi
<192.168.1.157> SSH: EXEC sshpass -d12 ssh -C -vvv -o ControlMaster=auto -o ControlPersist=60s -o User=pi -o
ConnectTimeout=10 -o ControlPath=/home/craig/.ansible/cp/ansible-ssh-%h-%p-%r -tt 192.168.1.157 '/bin/sh -c
''''LANG=en_US.UTF-8 LC_ALL=en_US.UTF-8 LC_MESSAGES=en_US.UTF-8 /usr/bin/python
/home/pi/.ansible/tmp/ansible-tmp-1462650872.08-108657558511969/ping; rm -rf "/home/pi/.ansible/tmp/ansible-
tmp-1462650872.08-108657558511969/" > /dev/null 2>&1''''''
192.168.1.157 | SUCCESS => {
    "changed": false,
    "invocation": {
        "module_args": {
            "data": null
        },
        "module_name": "ping"
    },
    "ping": "pong"
}
```

**“Tasks”**

---

- hosts: all
  - become: true
  - tasks:
    - name: Ensure tmux is installed on this machine
      - apt: name=tmux state=present



*Demo...*

***And now to remove tmux...***

---

- hosts: all
  - become: true
  - tasks:
    - name: Ensure tmux is installed on this machine
      - apt: name=tmux state=absent

*Demo...*

**“Roles”**

# “Roles”

- The Type of the machine
  - Web Server / Load Balancer / Redis / etc.
- The application installed on the machine
  - The Sprocket Service, The expensive third-party application, etc.



---

- name: Beaglebone Development
  - hosts: development
  - become: true
  - roles:
    - dev\_common

---

- name: Verify that the system libraries are installed (Debian)
  - apt: pkg={{ item }} state=present
  - with\_items:
    - build-essential
    - libssl-dev
  - when: ansible\_os\_family == 'Debian'
  - sudo: true

*Demo...*

# **Variables**

# Using variables in Ansible

- group\_vars
  - File named for the group
    - Eg: production, raspberry, etc.
- Uses Jinja Substitution
  - {{ item }}

*Variables in templates*  
*Demo...*

*Changing templates*  
*Demo...*

# Just scratching the surface

- Copy / Remove files
- Add / Remove users
- Linking files
- Cloning / Pulling from remote git repos
- Extracting tar / zip files
- Changing configuration files



**Basically anything you currently  
do in a shell script**

**Showing off...**

**Upgrading all Debian machines...**

**Cloning from github / linking files...**

**Handlers...**

- name: Copy nginx configuration  
template: src=nginx.conf dest=/etc/nginx/conf.d/{{ application }}.conf  
notify: restart nginx  
sudo: true

*handlers/main.yaml*

---

- name: restart nginx  
service: name=nginx state=restarted enabled=yes  
sudo: true

# **Ansible Galaxy**



[ABOUT](#)[EXPLORE](#)[BROWSE ROLES](#)[BROWSE AUTHORS](#)[SIGN IN](#)

Ansible Galaxy is your hub for finding, reusing and sharing the best Ansible content.

Log Into Galaxy with GitHub



Use an existing account  
not associated with GitHub



## DOWNLOAD

Jump-start your automation project with great content from the Ansible community. Galaxy provides pre-packaged units of work known to Ansible as [roles](#). Roles can be dropped into Ansible PlayBooks and immediately applied to your infrastructure.

Use [Browse Roles](#) to find roles for your project. Then download a role onto your Ansible host using the "ansible-galaxy" command that comes bundled with Ansible.

For example:

```
$ ansible-galaxy install username.rolename
```

[Learn more...](#)



## SHARE

Be an active member of the community and help other Ansible users by sharing roles you create.

Maybe you have a role for installing and configuring a popular software package or a role for deploying software built by your company. Whatever it is, use Galaxy to share it.

Top content authors will be featured, achieving worldwide fame. Or at least, fame on the Internet among developers and sysadmins just like yourself!

[Learn more about creating and sharing roles...](#)

## ★ FEATURED

ROLE: [carlosbuenosvinos.ansistrano-deploy](#) - Ansible role to deploy scripting applications like PHP, Python, Ruby, etc. in a Capistrano style

< ● ○ ○ >

AUTHOR: [mrlesmithjr](#) with 108 roles.

< ● ○ ○ >

BLOG: [AnsibleFest London 2016 Presentations](#)

Ansible Galaxy | Explore - Google Chrome

Ansible Galaxy | Explore

https://galaxy.ansible.com/explore#/

AppsMorning - WorkGamesLogitech Media SMy BooksGoogle FitYNABJitsi Meet# generalPyOhioYour Podcasts - COther bookmarks

A

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Most Starred

Role	Stars
<a href="#">carlosbuenosvinos.ansistrano-deploy</a>	487
<a href="#">jdauphant.nginx</a>	242
<a href="#">ANXS.postgresql</a>	241
<a href="#">flyapen.jenkins</a>	196
<a href="#">DavidWittman.redis</a>	193
<a href="#">angstwad.docker_ubuntu</a>	178
<a href="#">geerlingguy.mysql</a>	156
<a href="#">thefinn93.letsencrypt</a>	132
<a href="#">HashNuke.elixir-stack</a>	130
<a href="#">geerlingguy.apache</a>	123

View More

Most Watched

Role	Watchers
<a href="#">plone.plone_server</a>	175
<a href="#">couchbaselabs.couchbase-server</a>	88
<a href="#">basho-labs.riak-kv</a>	75
<a href="#">carlosbuenosvinos.ansistrano-deploy</a>	45
<a href="#">Dynatrace.Dynatrace-Glassfish-Agent</a>	42
<a href="#">Dynatrace.Dynatrace-Java-Agent</a>	39
<a href="#">Dynatrace.Dynatrace-License</a>	38
<a href="#">Dynatrace.Dynatrace-Update</a>	38
<a href="#">Dynatrace.Dynatrace-Apache-HTTPD-Ag...</a>	38
<a href="#">Dynatrace.Dynatrace-Tomcat-Agent</a>	38

View More

Most Downloaded

Role	Downloads
<a href="#">geerlingguy.composer</a>	12846
<a href="#">geerlingguy.daemonize</a>	11751
<a href="#">geerlingguy.mailhog</a>	11666
<a href="#">geerlingguy.nginx</a>	11183
<a href="#">geerlingguy.mysql</a>	11159
<a href="#">geerlingguy.java</a>	10982
<a href="#">geerlingguy.php</a>	10836
<a href="#">geerlingguy.apache</a>	10251
<a href="#">geerlingguy.git</a>	10135
<a href="#">geerlingguy.firewall</a>	8346

View More

View All Roles

Top Tags

Tag	# Roles
<a href="#">system</a>	2788
<a href="#">development</a>	1541
<a href="#">web</a>	1375

Top Contributors

User	# Roles
<a href="#">mrlesmithjr</a>	108
<a href="#">andrewrothstein</a>	106
<a href="#">tersmitten</a>	102

Newest Roles

Role	Added On
<a href="#">kobanyan.chibineko</a>	08 May
<a href="#">insanity54.openbazaar</a>	08 May
<a href="#">vkill.environment_variables</a>	08 May

Ansible Galaxy | geerlingguy.mysql - Google Chrome

Ansible Galaxy | geerlingguy.mysql

https://galaxy.ansible.com/geerlingguy/mysql/

AppsMorning - WorkGamesLogitech Media ServerMy BooksGoogle FitYNABJitsi Meet# general | PyOhioYour Podcasts - Craig

Other bookmarks

A

GALAXY


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ROLE DETAIL

geerlingguy.mysql

MySQL server for RHEL/CentOS and Debian/Ubuntu.



geerlingguy

DetailsREADME

build passingDownloads 11159

Issue Tracker

Github Repo

Watch 19

Star 156

Minimum Ansible Version1.9

Installation\$ ansible-galaxy install geerlingguy.mysql

Tagsdatabase

Created03/01/2014 03:32:03 AM

Imported05/04/2016 16:21:04 PM

Version History

Version	Release Date
2.2.1	05/04/2016 20:08:08 PM
2.2.0	04/30/2016 00:01:12 AM
2.1.1	04/29/2016 01:00:01 AM
2.1.0	04/22/2016 22:48:10 PM
2.0.0	03/27/2016 00:10:00 AM

**Hey, aren't you at a BSD meeting?**

**OBLIGATORY BSD SLIDE...**

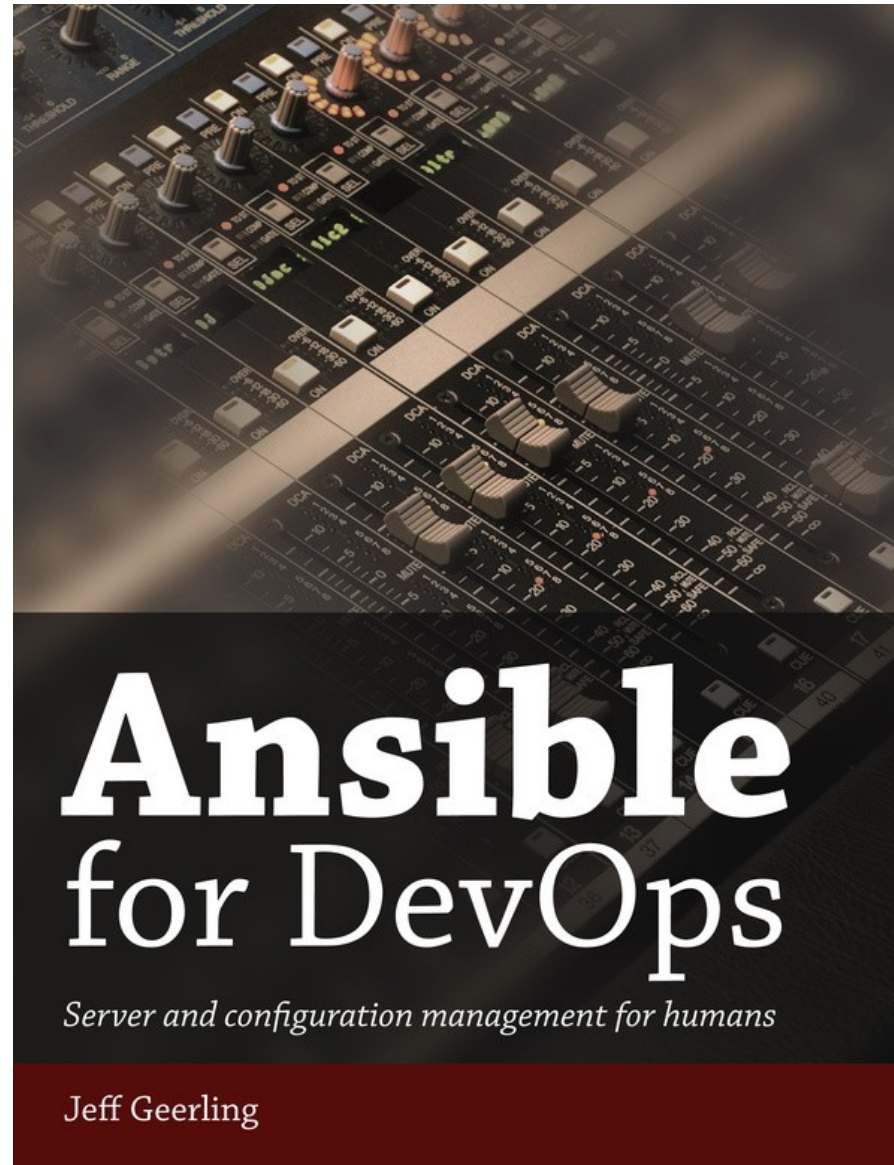
**[http://docs.ansible.com/ansible/intro\\_bsd.html](http://docs.ansible.com/ansible/intro_bsd.html)**





David Revoy, [www.peppercarrot.com](http://www.peppercarrot.com)

(Released CC-BY 4.0)



<https://leanpub.com/ansible-for-devops>



**Thank you!**

# **Ansible**

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